R E P O R T R E S U M E S

ED 016 515 PS 000 319

POSITIVE SOCIAL REINFORCEMENT IN THE NURSERY SCHOOL PEER GROUP.

BY- CHARLESWORTH, ROSALIND HARTUP, WILLARD W.

EDRS PRICE MF-$0.25 HC-$0.32 6P.

DESCRIPTORS- *BEHAVIOR PATTERNS, *POSITIVE REINFORCEMENT, *PRESCHOOL CHILDREN, ANALYSIS OF VARIANCE, NURSERY SCHOOLS, PEER GROUPS, *PEER RELATIONSHIP, SOCIAL DEVELOPMENT, SOCIAL RELATIONS, SOCIAL INFLUENCES, REACTIVE BEHAVIOR, *OBSERVATION, SKINNER

FOR 5 WEEKS, 2 OBSERVERS MADE DAILY VISITS TO A LABORATORY PRESCHOOL TO COLLECT INFORMATION ON THE AMOUNT AND KINDS OF POSITIVE SOCIAL REINFORCEMENT CHILDREN GIVE TO EACH OTHER IN NURSERY SCHOOL. SEVENTY CHILDREN (AGED 3 YEARS 4 MONTHS TO 4 YEARS 9 MONTHS) WERE GROUPED INTO 2 OLDER AND 2 YOUNGER CLASSES. EACH CHILD WAS OBSERVED IN RANDOM ORDER FOR 3-MINUTE PERIODS AT 12 DIFFERENT TIMES. OBSERVATIONS WERE RECORDED IN PRESET PROTOCOLS CODED IN 4 CATEGORIES ACCORDING TO KINDS OF REINFORCEMENT, (1) GIVING POSITIVE ATTENTION AND APPROVAL, (2) GIVING AFFECTION AND PERSONAL ACCEPTANCE, (3) SUBMISSION, AND (4) TOKEN GIVING. ANALYSIS OF VARIANCE OF THE DATA SHOWED THAT 4-YEAR-OLDS HAD A SIGNIFICANTLY HIGHER RATE OF POSITIVE SOCIAL REINFORCEMENT IN A WIDER DISTRIBUTION THAN DID 3-YEAR-OLDS. REINFORCEMENT OVERTURES OCCURRED MOST FREQUENTLY DURING SUCH DRAMATIC PLAY ACTIVITIES AS PLAYING HOUSE OR PLAYING WITH BLOCKS, TRUCKS, AND PUPPETS. SUPPORT GIVEN RELATED POSITIVELY TO THE AMOUNT RECEIVED AND USUALLY SUSTAINED ONGOING BEHAVIOR. INVESTIGATORS CONCLUDED THAT THERE IS A MARKED INCREASE IN A CHILD'S USE OF GENERALIZED SOCIAL REINFORCERS DURING PRESCHOOL YEARS AND THAT A WIDE VARIETY OF POSITIVE RESPONSES ARE USED. THIS ARTICLE IS PUBLISHED IN "CHILD DEVELOPMENT," VOLUME 38, NUMBER 4, DECEMBER, 1967. (MS)

ED016515

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

POSITIVE SOCIAL REINFORCEMENT IN THE NURSERY SCHOOL PEER GROUP

ROSALIND CHARLESWORTH
Ann Arbor Public Schools

WILLARD W. HARTUP
University of Minnesota

An observational method was devised for obtaining normative information on the amount and kinds of positive social reinforcement dispensed by preschool-age children to each other in nursery school. Data were collected in 4 preschool classes. It was found that children in the older groups reinforced their peers at a significantly higher rate than those in the younger groups and that the amount of reinforcement given was positively related to the amount received. Reinforcement was dispensed in a higher proportion when a child was engaged in dramatic play activity than when he was engaged in other pursuits (such as art, music, or table games). About half the reinforcements were given in response to overtures from the recipients and half spontaneously. The consequence of reinforcement was, in largest proportion, the continuation of the recipient's activity at the time of reinforcement.

Numerous attempts are currently being made to study patterns of young children's social behavior within the conceptual framework of reinforcement theory. Only a few studies (Floyd, 1964; Hartup, 1964; Patterson, Bricker, & Greene, 1964), however, have dealt particularly with preschool-age peers as agents of reinforcement. The results of the Patterson et al. (1964) study strongly support the utility of applying reinforcement

---

The authors wish to acknowledge the assistance of Elizabeth Konen, Nancy Mann, and Marilyn Rausch in carrying out this study. They also extend thanks to the staff of the University of Minnesota Laboratory Preschool for their cooperation, and to Sandra Cohen and James Bryan for their helpful reviews of an earlier manuscript. This project was carried out while the first author was supported by NICHD grant No. T1-HD-105-01. Author Charlesworth's address: Jones School, 401 North Division, Ann Arbor, Michigan 48104.

"PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY Rosalind Charlesworth and Willard W. Hartup TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE U.S. OFFICE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER."

PS000319

theory to the observational study of aggressive behavior as it occurs in the nursery school. The present study investigated patterns of positive social behavior in the nursery school peer group considered in terms of this theory. Previous studies of positive social behavior have used more molecular descriptive concepts (Swift, 1964), such as "cooperation," "leadership," "sympathy," and "social participation."

Skinner's rubric "generalized reinforcer" was chosen as the basis for defining positive social reinforcement. Skinner (1953) postulates that reinforcement from people gives rise to several important forms of generalized social reinforcers: attention (attending to another), approval (praise or acceptance), affection (physical gestures or verbal statements), submissiveness (following a request or suggestion), and tokens (giving tangible physical objects). Gewirtz (1961) has elaborated further the processes by which these stimuli acquire reinforcing properties in early infancy and become the prime maintainers of social life. For the present study, Skinner's conceptualization was used as a guide for defining categories of social behavior, and an observational method was then designed for obtaining information concerning reinforcement frequencies occurring in the nursery school peer group.

METHOD

Subjects

The children observed were enrolled in a laboratory preschool. They were, for the most part, children of university faculty members and other professional people. The subjects for the principal investigation consisted of two groups of children between the ages of 4–1 and 4–9 and two groups between 3–4 and 4–0. The total sample included 35 boys and 35 girls, divided into preschool classes of 16, 17, 18, and 19 children each. The major portion of the children in the two older groups had had previous nursery school experience. One group of 3-year-olds consisted of children with no previous experience, while the other group was about equally divided between new children and nursery school veterans. One of the older and one of the younger groups met five mornings per week, while the other two groups met three afternoons per week.

The Observational Technique

Procedure.[1]—The observer arrived in the room before the children. Prior to collecting any data, the observer spent time sitting in the room practicing the observational technique, learning the children's names, and allowing the children to become accustomed to her presence. The observations began during the fourth week of the school year and continued for 5 weeks. Each day the observer began as soon as half the children had arrived and continued until cleanup was announced. The children were observed in random order for 3-minute periods. A child was never observed more than twice on the same day. Twelve 3-minute time segments were recorded for each child in each of the older groups, ten segments for one of the younger groups, and eight for the other. For purposes of statistical analysis, the scores for the younger groups were extrapolated to 12 observation periods. Tally was made of the location of the observers during each observation period.

The following information was recorded: the child's name and the names of the other children and adults engaged in the same activity or in parallel activity; the activity in which the child was engaged; a detailed running account of the child's behavior and the behavior of any child with whom he interacted.

There were two observers. Two of the groups (one 3-year-old and one 4-year-old) were observed exclusively by O_1 and one (4-year-old) by O_2. In the fourth group (3-year-old), half of the observations were carried out by the O_1 alone and half by both observers simultaneously. A comparison of the number of codeable incidents recorded by each observer showed that O_1 recorded 16 per cent more codeable incidents than did O_2.

The observation protocols were coded using the following group of categories:

I. *Giving positive attention and approval:* attending, offering praise and approval, offering instrumental help, smiling and laughing, verbal help, informing another of a third person's needs general conversation.
II. *Giving affection and personal acceptance:* physical and verbal.
III. *Submission:* passive acceptance, imitation, sharing, accepting another's idea or help, allowing another child to play, compromise, following an order or request with pleasure and cooperation.
IV. *Token giving:* giving tangible physical objects, such as toys or food, spontaneously.

These categories coincide with those listed by Skinner (1953) as possessing widely shared reinforcing value in humans. It is not argued that the ratings covered all classes of social stimuli having reinforcing value. Crying, for example, can be positively reinforcing in peer interaction but was not tabulated in this study. Judgments concerning the frequency of social rein-

[1] An Observation and Coding Manual containing a description of the conditions for observation, instructions for recording observations, the coding procedure, and sample protocols has been deposited as Document No. 9617 with the ADI Auxiliary Publications Project, Photoduplication Service, Library of Congress, Washington, D.C. 20540. A copy may be secured by citing the Document No. and by remitting $2.50 for photoprints or $1.75 for 35 mm. microfilm. Advance payment is required. Make checks or money orders payable to: Chief, Photoduplication Service, Library of Congress.

forcers were made using the following considerations: (*a*) the occurrence of a reinforcement was defined in terms of the kind of action involved, rather than in the effects the action had upon the child perceiving it; and (*b*) the record needed to contain evidence that the recipient perceived the potentially reinforcing activity of his peer. The reinforcements were also coded as to whether they were accepted, rejected, or ignored. In the data analysis, the frequencies of reinforcements *given* are those positive social reinforcements which were followed by positive behavior on the part of the recipient. Also tabulated were instances for each child in which he received reinforcement from other children as recorded in the other children's protocols.

The observations were coded by one of the observers and a naïve coder in order to obtain information on the reliability of the coding procedure. Two ratios were computed. The first, .77, is a ratio of agreement/agreement + disagreement in which agreement concerns the presence of positive social reinforcement (even though there might be disagreement as to the category of the reinforcement). A second ratio, in which agreement concerned the presence of a particular category of reinforcement, was .64. These reliability checks were based on 20 per cent (161) of the 3-minute protocols. A third coder tallied information on location, presence or absence of an overture, and consequences of reinforcement.

RESULTS AND DISCUSSION

Giving Positive Social Reinforcement

Findings.—Age and sex differences in frequency of giving positive social reinforcement were revealed by means of a series of two-way analyses of variance for unequal cell frequencies (Table 1). For total frequencies (the sum of all reinforcements regardless of category), there was a significant age difference, with the 4-year-olds giving more reinforcement than

TABLE 1

SUMMARY OF ANALYSES OF VARIANCE FOR POSITIVE SOCIAL REINFORCEMENT SCORES FOR TWO AGE GROUPS

		Reinforcement Score				
Source	*df*	Total Frequency (*F*)	Category I (*F*)	Category II (*F*)	Category III (*F*)	Total *N* Different Peers (*F*)
Age.....	1	9.30**	15.03**	3.29	1.51	21.25**
Sex.....	1	3.31	1.03	1.30	6.03*	2.73
A × S.....	1	1.35	<1.00	5.68*	<1.00	3.53
Within.....	66	...	...	...	...	...

* $p < .02$.
** $p < .01$.

3-year-olds ($F = 9.30$, $p < .01$). Most of this difference is accounted for by Category I: Giving Attention and Approval ($F = 15.03$, $p < .01$). For Category II, a significant age by sex interaction was found ($F = 5.68$, $p < .025$). When the means are examined (Table 2), it can be seen that

TABLE 2

MEANS AND RANGES OF POSITIVE SOCIAL REINFORCEMENT SCORES FOR FOUR SEX AND AGE GROUPS

			Reinforcement Score									
			Total Frequency		Category I		Category II		Category III		Total *N* Different Peers	
Sex	Age	*N*	$\bar{X}$	*R*	$\bar{X}$	*R*	$\bar{X}$	*R*	$\bar{X}$	*R*	$\bar{X}$	*R*
M....	4	17	22.82	6–49	10.29	2–24	3.18	0–10	8.47	0–23	5.76	2–11
F.....	4	16	21.06	2–54	9.56	1–24	4.06	0–14	6.19	0–18	5.88	2–9
M....	3	18	17.77	4–35	6.09	1–15	3.58	0–16	7.74	3–25	4.44	2–8
F.....	3	19	9.79	0–33	4.36	0–14	1.07	0–5	3.82	0–15	2.74	0–7

younger and older boys gave affection and personal acceptance in almost equal amounts, while younger girls gave much less frequent affection than older girls or either group of boys. Boys were found to give submissive types of reinforcements (Category III) significantly more frequently than girls ($F = 6.03$, $p < .025$).[2] It was also found that older children reinforced a significantly greater number of other children than did the younger children ($F = 21.25$, $p < .01$).

Another set of analyses was conducted in order to test classroom and sex differences in giving reinforcements within the two age groups separately (Table 3 and Table 4). For the 4-year-olds, there were significant class-

TABLE 3

SUMMARY OF ANALYSES OF VARIANCE OF POSITIVE SOCIAL REINFORCEMENT SCORES FOR TWO 4-YEAR-OLD CLASSES

		Reinforcement Score				
Source	*df*	Total Frequency (*F*)	Category I (*F*)	Category II (*F*)	Category III (*F*)	Total *N* Different Peers (*F*)
Class.....	1	5.91**	8.01***	4.50*	2.25	10.14***
Sex.....	1	<1.00	<1.00	<1.00	1.54	<1.00
C × S.....	1	<1.00	<1.00	<1.00	<1.00	<1.00
Within....	29	...	...	...	...	...

* $p < .05$.
** $p < .02$.
*** $p < .01$.

[2] No separate analysis of Category IV was completed due to the small frequencies obtained.

TABLE 4

SUMMARY OF ANALYSES OF VARIANCE OF POSITIVE SOCIAL REINFORCEMENT SCORES FOR TWO 3-YEAR-OLD CLASSES

		Reinforcement Score				
Source	*df*	Total Frequency (*F*)	Category I (*F*)	Category II (*F*)	Category III (*F*)	Total *N* Different Peers (*F*)
Class.....	1	<1.00	<1.00	<1.00	<1.00	5.52**
Sex.....	1	6.74**	1.69	7.79***	5.12*	10.16***
C × S.....	1	<1.00	<1.00	<1.00	<1.00	1.01
Within.....	33	...	...	...	...	...

* $p < .05$.
** $p < .02$.
*** $p < .01$.

room differences on four of the five variables tested; only the frequency of submissive reinforcers did not differ significantly between the two classes for 4-year-olds. For the younger children, there were significant sex differences in favor of the boys in four of the five categories, with only attention and approval not reaching a significant level. There was also one significant classroom difference for the younger children. Subjects in one classroom reinforced a larger number of children than those in the other ($F = 5.16, p < .025$).

Differences in the mean number of positive reinforcements given were also analyzed according to the sex of the recipient. Boys gave significantly more reinforcements to other boys than they gave to girls ($t = 4.43$, $p < .002$), and girls gave more reinforcements to other girls than to boys ($t = 2.18, p < .05$).

The proportions of each type of reinforcement given were tabulated. Most frequently given by the 4-year-olds was attention and approval (46 per cent), followed by submission (35 per cent), affection and personal acceptance (16.8 per cent), and token giving (2.27 per cent). The proportions of two categories of reinforcers show a slight age shift: the 3-year-olds used a larger proportion of submissive reinforcements (41 per cent) and a smaller proportion of attention and approval (37 per cent) than the 4's. The 3-year-olds give almost exactly the same proportion (16.5 per cent) of affection and personal acceptance and more (5.5 per cent) tokens.

Discussion.—The findings presented above show that considerably more positive social reinforcement was given by 4-year-olds than by 3-year-olds. Also, the older children distributed their reinforcements to a larger number of other children than did the younger children. These findings parallel the classic findings of Parten (1932) and others concerning the association between chronological age and social participation. The present findings, however, document the fact that the preschool years encompass a period of

marked increases in the child's use of generalized social reinforcers in his interactions with peers.

The findings also reveal early differences between boys and girls with respect to certain aspects of peer interaction and utilization of social reinforcers. Boys participated in more give-and-take play in the nursery school than did girls; that is, they gave more submissive reinforcements generally, and they gave more reinforcements during dramatic play. The finding that younger girls gave considerably less affection and personal acceptance than boys and that 82 per cent of this type of reinforcement was given spontaneously indicates that when girls are placed in a group setting at age 3 they are less socially active than boys. Further, the younger girls gave less total reinforcement than younger boys. Thus, sex differences in use of social reinforcers, particularly by younger nursery school children, are clearly revealed by the data. On the other hand, measures of what might be called "social activity level" or "general social participation" were not procured. Therefore, it cannot be argued, without further study, that the sex differences (or the age differences discussed in the preceding paragraph) are independent of differences in general activity or participation.

The differences between the older classes in the number of reinforcements given may be related to two factors. The teacher of the group in which the most reinforcements were given felt that this was an unusually socially active group. In contrast to the other older group, these children not only gave more reinforcements but also had a lower frequency of rejected reinforcements (these were not included in the totals given). There was also a significant difference in the number of different individual children reinforced in each of these two groups. The group in which more reinforcements were given was the 3-day-per-week group.

Evidence for the early formation of a sex schism is apparent in the data on object choice. Boys tended to reinforce boys and girls to reinforce girls. These data indicate that the relative deprivation of reinforcing stimuli from persons of the opposite sex cited by Stevenson (1965) extends from early in the preschool years in the interaction of the child with his peers.

Giving and Receiving of Reinforcement

Findings.—The relationship between giving and receiving of positive social reinforcement was tested by the use of the within-groups correlation coefficient (Walker & Lev, 1958). The correlation between the total numbers of reinforcements given and the total number received was large ($r = .79$) and highly significant ($p < .01$). Each separate category of giving reinforcement was significantly related to each category of receiving it, with correlations ranging from $r = .38$ ($p < .01$) to $r = .64$ ($p < .01$) (Table 5). Also highly related were the number of individual children reinforced by a child and the number of individuals he received reinforcements

TABLE 5

WITHIN-GROUPS CORRELATIONS BETWEEN FREQUENCIES OF GIVING AND RECEIVING POSITIVE SOCIAL REINFORCEMENT FOR FOUR CLASSROOMS

RECEIVING POSITIVE SOCIAL REINFORCEMENT	GIVING POSITIVE SOCIAL REINFORCEMENT		
	Category I (r)	Category II (r)	Category III (r)
Category I.....	.39	.45	.64
Category II.....	.51	.38	.65
Category III.....	.69	.54	.58

Note.—All correlations are significant beyond .01 ($N = 70$).

from ($r = .46, p < .01$). The total frequency of reinforcements given and the number of people to whom they were distributed were correlated $r = .62$ ($p < .01$), and the total number of reinforcements received and the number of people they were received from were correlated .70 ($p < .01$).

Discussion.—The results on the giving and the receiving of reinforcement indicate that these are reciprocal activities. Those who give the most get the most, and vice versa. Since precaution was taken to base the measures of giving and receiving on different events, this finding is of substantial interest. For one thing, it suggests that reinforcement giving is an operant which comes under the control of generalized social reinforcers of other children at very early ages. This finding also is reminiscent of the commonality between dependency behavior and nurturance giving found by Hartup and Keller (1960) and Eininger (1965).

Location, Overtures, and Consequences

Findings.—Each reinforcing incident was categorized as to the type of play occurring at the time the child was reinforcing the "other." The type of play (or location of the child) was categorized: (*a*) dramatic play—housekeeping area, blocks, trucks, puppet play, and so forth; (*b*) table activities—puzzles or other manipulative table toys, art activities, stories or flannel board, and so forth; (*c*) wandering—going from place to place without engaging in the available activities or standing on the sidelines observing. Overall, 65 per cent of the reinforcement was given during dramatic play activities. The following proportions of specific kinds of reinforcement occurred during dramatic play: Category I, 59 per cent; Category II, 70 per cent; Category III, 67 per cent; and Category IV, 77 per cent. Boys gave a larger proportion of their reinforcements (74 per cent) during dramatic play than did girls (51 per cent).

A tally was made of the types of activity in which children were engaged when no reinforcements were given during the 3-minute observation period. During these observation periods, children were usually engaged in table activities (60 per cent) or wandering about the room (19 per cent),

while only 21 per cent of these observations found the child in a play area where dramatic play was in progress or was a possibility.

Each reinforcement was also coded as to whether an overture had been made by the recipient, that is, whether an indication was given that reinforcement was desired. Overtures, overall, were present almost half (47 per cent) of the time but the proportions differed for each category of reinforcement. For attention and approval, the proportion was 49 per cent; for submission, 67 per cent; for affection and personal acceptance, 18 per cent; and for tokens, 4 per cent. There were no age or sex differences in proportion of overture present for total frequencies.

The coder found it somewhat difficult to code the consequences of reinforcement, and thus, the following results are tentative. For the most part (58 per cent), reinforcement was followed by the recipient continuing the activity in which he was engaged at the time of reinforcement. Sixteen per cent of the reinforcements were followed by a change in behavior, 6 per cent were rejected, 8 per cent were ignored, and 12 per cent could not be rated.

Discussion.—The data on location of reinforcement show that opportunities for dramatic play activities are particularly conducive to the child's acquisition of positive social skills with peers. It is clear from the results of this study that, as would be expected, activities which involve attending to a project or to an adult do not elicit as large quantities of social reinforcement from peers as do dramatic play activities. It is also interesting that boys, who are usually characterized as being more active than girls in the nursery school play group, do indeed engage in a larger proportion of social reinforcing peer interaction during dramatic play than girls, who divide their reinforcements almost equally between dramatic play and more sedentary activities.

The data on overture present or absent suggest that different stimuli elicit the giving of different kinds of social reinforcers. Attention, approval, and submission seem to require a prior social response from another child. On the other hand, affection, personal acceptance, and tokens appear to function as instrumental actions used to initiate an interaction sequence. The data concerning the consequences of peer reinforcement are particularly important, although in need of replication. It appears that reinforcement (as defined by the actions observed in the present study) usually sustains ongoing behavior and that very few reinforcements are rejected.

CONCLUSIONS

The observational method used, although time consuming and comparatively subjective, yielded promising results concerning the positive social reinforcement behavior of preschool children. The results indicated that children of this age manifest a wide variety of positive behaviors, and

developmental changes are apparent. The vitimate value of the present observational method will depend on the predictive value of the information obtained. As is reported elsewhere (Hartup & Coates, 1967; Hartup, Glazer, & Charlesworth, 1967), the present measures of classroom behavior have been found to be predictive of behavior in two other situations. Consequently, further work utilizing this approach to the study of peer reinforcement seems warranted.

REFERENCES

Eininger, Mary Ann. Dependency behavior as related to two kinds of nurturance in young children. Unpublished M.A. thesis, University of Minnesota, 1965.

Floyd, Joanne. Effects of the amount of reward and friendship status of the other on the frequency of sharing in children. Unpublished doctoral dissertation, University of Minnesota, 1964.

Gewirtz, J. L. A learning analysis of the effects of normal stimulation, privation and deprivation on the acquisition of social motivation and attachment. In B. Foss (Ed.), *Determinants of infant behavior.* New York: Wiley, 1961.

Hartup, W. W. Friendship status and the effectiveness of peers as reinforcing agents. *Journal of experimental child Psychology,* 1964, 1, 154–162.

Hartup, W. W., & Coates, B. Imitation of a peer as a function of reinforcement from the peer group and rewardingness of the model. *Child Development,* 1967, 38, 1003–1016.

Hartup, W. W., Glazer, Jane, & Charlesworth, Rosalind. Peer reinforcement and sociometric status. *Child Development,* 1967, 38, 1017–1024.

Hartup, W. W., & Keller, E. D. Nurturance in preschool children and its relation to dependency. *Child Development,* 1960, 31, 681–689.

Parten, Mildred B. Social participation among preschool children. *Journal of abnormal and social Psychology,* 1932, 27, 243–269.

Patterson, G. E., Bricker, W., & Green, M. Peer group reactions as a determinant of aggressive behavior in nursery school children. Paper presented at the meetings of the American Psychological Association, 1964.

Skinner, B. F. *Science and human behavior.* New York: Macmillan, 1953.

Stevenson, H. W. Social reinforcement of children's behavior. In L. P. Lipsitt and C. C. Spiker (Eds.), *Advances in child development and behavior.* Vol. 2. New York: Academic Press, 1965. Pp. 97–126.

Swift, Joan. Effects of early group experience: the nursery school and day nursery. In M. Hoffman and L. Hoffman (Eds.), *Review of child development research.* Vol. 1. New York: Russell Sage Found., 1964. Pp. 249–288.

Walker, Helen, & Lev, J. *Elementary statistical methods.* New York: Holt, 1958.